

A large breast lump causing a diagnostic dilemma

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Summary

Lipomas are the most frequent mesenchymal tumors consisting of mature fat cells and are usually benign. They represent approximately 4-5% of all benign tumors that occur in human body. They can sometimes present very large sizes in their localization and are referred to as "giant lipomas". In this article, the authors report an unusual case of a right breast giant lipoma causing diagnostic dilemma. A 62-year-old woman was referred to the present hospital with a complaint of a sudden chest asymmetry of the right breast increasing at the connection of the pectoralis muscle. Ultrasonography revealed breast tissue involution (ACR 1). Specifically, the ultrasound findings were mostly compatible with lipid mass (lipoma) and areas with cystic necrosis. The findings from digital mammogram were not conclusive compared with ultrasound examination. Moreover, the results from the breast MRI were contradictory and other diagnosis was evinced. The patient underwent wide-surgical excision and reconstruction and had an excellent postoperative issue. According to the final histopathological examination, the tumor measured 17 cm and was covered by a thin membranous capsule. Furthermore, it had the appearance and composition of adipose tissue. In conclusion, according to the authors' view, this case is rare due to its challenging size and the difficulty in differential diagnosis.

Key words: Breast lipoma; Giant lipoma; Rare breast lump; Benign breast tumor.

Introduction

Lipomas are ordinarily benign tumors [1, 2]. In vast majority, lipomas are small and usually do not enlarge expeditiously [3]. Moreover, in most cases, their appearance is sporadic, with no known cause. Although lipomas may occur in any part of the body and are composed mainly of fat tissue [4], they rarely develop in the breast causing diagnostic dilemma [5]. It is well known that mammography and ultrasonography are often the two basic imaging tools in case of breast diseases [6] and by extension when a palpable mass is found. However, often these tools are not capable to distinguish a lipoma from other conditions. The unusual case of a right breast giant lipoma prompted the idea of writing this report mainly because of its extremely challenging size and due to the difficulty in differential diagnosis with the use of the available imaging techniques.

Case Report

A 62-year-old female came to REA hospital in Athens with a complaint of chest asymmetry of the right breast increasing at the connection of the pectoralis muscle. This symptom appeared a few two to three months prior. Clinical examination showed a palpable, movable, and painless mass in the right breast, without the presence of nipple discharge or axillary lymphadenopathy. The laboratory dosage of CEA and CA 15-3 were normal.

Ultrasonography revealed breast tissue involution (ACR 1). Moreover, a radiolucent mass (lipid tissue), two cm in diameter, close to major thoracic muscle was observed, and the muscle appeared thinner. Furthermore, the ultrasound showed that in the center of the mass there were three lipid cysts in contact with a diameter of four cm. In the additional work-up with shear wave elastography (SWE), the area presented a low mean value (17.0 kPa) and SWE-Ratio (1.23). Consequently, the ultrasound findings were mostly compatible with lipid mass (lipoma) or liposarcoma and areas with cystic necrosis.

The findings from digital mammography were classified into the BIRADS-2 category. It is noteworthy that mammography detected a scattered fibroglandular tissue, especially in upper outer quadrant of the breast. Additionally, mammography confirmed all the aforementioned findings from the ultrasound examination. Compared with the previous mammogram, there was no significant change in the radiographic appearance, except from the lesion in the right pectoralis major muscle.

Breast magnetic resonance imaging (MRI) exam was performed at axial, sagittal, and coronal planes, before and after the intravenous gadolinium contrast enhancement. According to the findings, there was a lesion consisting mainly of fat tissue under the right major pectoralis muscle. In the center of this lesion, a secondary multilobulated lesion approximately four cm in diameter, was recognized. This secondary lesion appeared with high intensity T1 signal and medium-to-low signal on T2-weighted images, while intravenous contrast injection showed linear peripheral enhancement. The differential diagnosis of this image was between accessory breast, lipomatosis or lipoma under the major pectoralis muscle, containing an area of fat necrosis. Neverthe-

Revised manuscript accepted for publication March 26, 2015



Figure 1. — Drawing of the surgical scars.

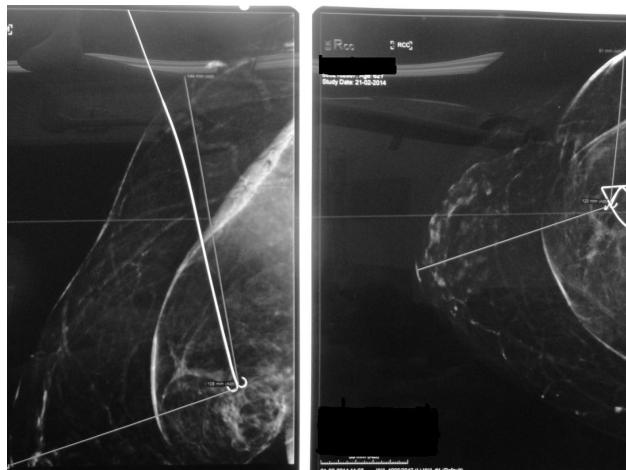


Figure 2. — Mammographic view (MLO and CC) with the hook wire.



Figure 3. — Wide-surgical excision and incision of the subcutaneous fat.



Figure 4. — Incision of the pectoralis muscle.



Figure 5. — Removal of lipoma.



Figure 6. — Giant breast lipoma.



Figure 7.— Lipoma measuring 17 cm.



Figure 8.— Excised specimen.

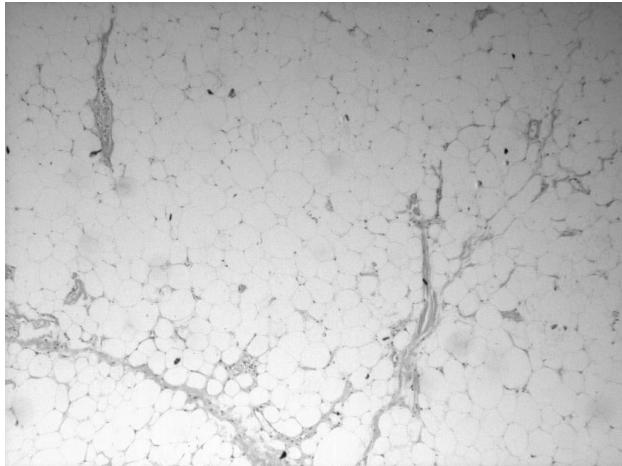


Figure 9.— Breast lipoma H&E $\times 25$.

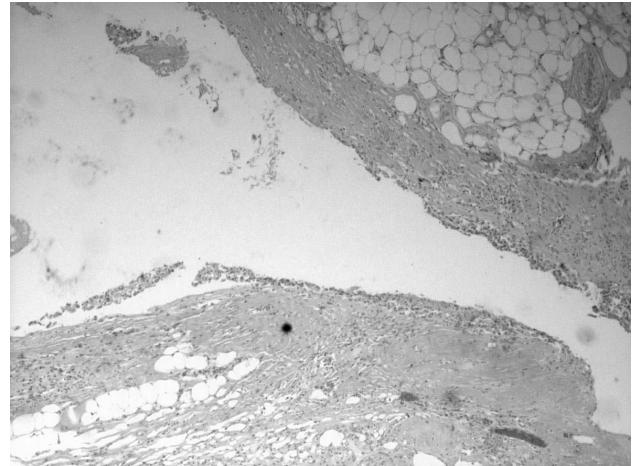


Figure 10.— Area of connective tissue lined by foamy histiocytes $\times 25$.

less, the last case was the most probable one. There was no area of abnormal enhancement that indicated invasive lesion of the breast after the intravenous gadolinium contrast injection. Moreover, there was no axillary adenopathy bilaterally.

Despite the probable benign condition, the patient was advised to have it removed by surgical procedure. The first step of the surgery was the exact location of the breast abnormality with the usage of a fine hook wire preoperatively (Figures 1, 2). The patient underwent wide-surgical excision under general anesthesia (Figures 3-5). An arcuate incision of lump was performed in the upper external quadrant of the right breast along the Langer's lines. After opening the subcutaneous tissue, the authors discovered that the major pectoralis muscle was very thin and dislocated. They opened with electrical scalpel the muscle longitudinally and the lump appeared and was grasped out from the scar. A precise hemostasis was performed and reconstruction of the defect was made with local gland flaps (Takeda technique). The surgical cavity was drained with a negative pressure aspira-

tion (wound vac). The result from the frozen section was negative for malignancy and specifically the specimen was diagnosed as lipoma and liponecrosis (Figures 6-8). According to the final histopathological examination, the tumor measured $17 \times 14 \times 8$ cm with a total weight of 1,789 grams and covered by a thin membranous capsule (Figures 9-12). Furthermore, it had the appearance and composition of adipose tissue. The patient had an excellent postoperative performance status and was discharged the same day.

Discussion

Lipomas are the most frequent mesenchymal tumors consisting of mature fat cells and are usually benign, well-circumscribed, and encapsulated [5, 7]. The incidence of lipomas ranges from approximately 10% to 16% in case of mesenchymal tumors [1, 8-10] and also, rep-

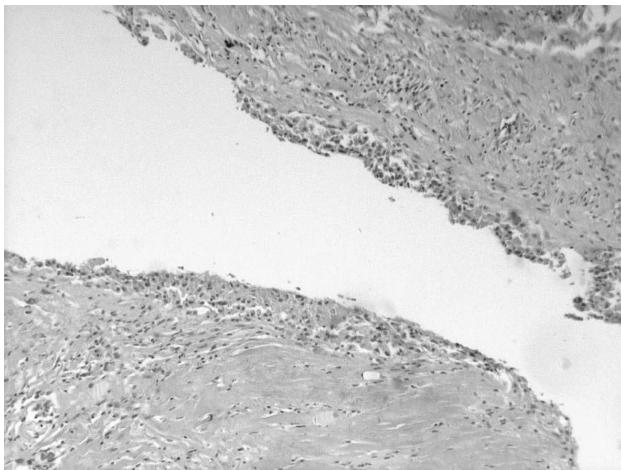


Figure 11.—Chronic inflammatory infiltrate and foamy histiocytes (H&E $\times 50$).

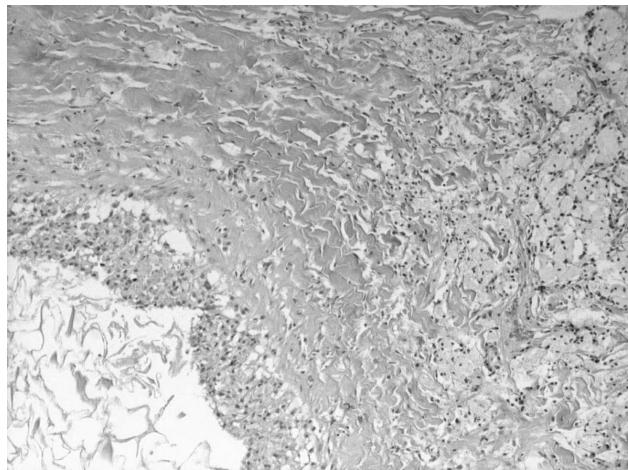


Figure 12.—Area of liponecrosis (H&E $\times 25$).

resent 4-5% of all benign tumors that occur in human body [11]. Owing to the limited information in the literature concerning lipoma occurring in breast tissue, the exact incidence of breast lipoma remains a subject of intense controversy [11]. Moreover, the etiology of lipoma development is not completely understood [4, 12]. It is worthwhile to note that lipoma may affect all people independent of their sex and age. As an example, there are several case reports that describe breast lipoma development in men [10]. Moreover, at times the patients may have more than one lipoma in their body and this is due to a genetic condition, which is known as familial multiple lipomatosis [4]. Lipomas are also known to develop in children, as shown by a study which conducted by Greek scientists [13], but its occurrence in this population is rare.

Giant breast lipomas are defined as tumors that have a diameter of at least ten cm in one dimension or weight of more than 1,000 grams [1,9-11]. Giant breast lipomas have rarely been reported in the literature and for this reason the present case report is rare due to the challenging tumor size. Owing to the normal fatty composition of the breast, breast lipoma may cause diagnostic uncertainty [5, 14]. Thus, difficulties in differentiation from other breast lesions are often encountered [1, 8]. The differential diagnosis of lipoma includes benign conditions: hamartoma, hematoma, haemangioma, angiomyolipoma, cyst, abscess, fat necrosis, fibroadenoma, accessory breast tissue, and malignant breast conditions: liposarcoma and carcinomas, also miscall breast conditions: as phyllodes tumor [5, 6, 9, 15, 16].

The data of the literature are in accordance that there is almost no risk of subsequent malignant transformation associated with lipomas [1, 2, 4]. However, if lipomas are $>$ ten cm they could contain sarcomas tissue and for this reason biopsy is required [12].

Undoubtedly, breast ultrasound and mammography are the two basic tools for the differential diagnosis of breast lumps [6, 9]. MRI can sometimes assist in difficult situations. However, the final diagnosis is made by core or “open excisional biopsy” [2]. It is noteworthy that in case of a clinical diagnosis of lipoma, a biopsy is required if the suspected lipoma causes symptoms as pain, movement restriction, and rapid enlargement or soft consistence [4].

The standard and definitive treatment of a lipoma should be surgical excision [12, 17, 18]. It is noteworthy, that some published scientific studies indicated that in some cases the endoscopic-assisted suction of lipomas with the usage of an ultrasonic scalpel may offer a better and a less invasive surgical result [19, 20]. After surgery, the most common complications are seroma, hematoma, infection, and scars [4]. Also, other modalities of treatment can be proposed: liposuction is an effective alternative treatment of giant lipomas as shown by two studies [5, 21] and has been associated with good cosmetic results [11]. Despite the fact that Raemdonck *et al.* demonstrated that there is a high percentage of recurrence after liposuction in comparison to surgical excision [22], a more recent study by Al-basti *et al.* reported that there was no sign of recurrence after liposuction in a six-year post-operative follow up [23]. However, this technique needs to be improved due to its side effects [11]. Another alternative treatment of lipomas is “chemical lysis” by subcutaneous injection of deoxycholate which creates lysis of the adipose tissue [24]. However, further studies are essential before this treatment can be routinely recommended [4].

Although successful excision leads to an excellent prognosis [1], follow-up is necessary due to the possibility of relapse after a few years [11]. In conclusion, despite the benign behavior of lipoma, because of the symptomatology, it is necessary to remove it in order to obtain final histopathological results.

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